



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

Name(s) Mahum Khan	Project Number S0413
Project Title Practice Makes Permanent: How Does Repetition Affect the Human Ability to Adapt to New Forms of Writing?	
<p style="text-align: center;">Abstract</p> <p>Objectives The goal of this project is to determine how efficient repetition is.</p> <p>Methods Materials: 30 volunteer within an age range of 10-19 Timer 3 sets of 3 codes written in Aristocrat limited of 40 characters. Each set follows the same alphabet patterns. An additional 10 for practice limited of 40 characters Sample 1 requires 1 practice and 3 tests Sample 2 requires 3 practice and 3 tests Sample 3 requires 6 practice and 3 tests A description of an Aristocrat 20 half sheets of scratch paper for each participant</p> <p>Methods: Bring each testee in the room. Make sure it is a room with minimal noise level throughout the entirety of the experiment. Hand the sheet that explains an Aristocrat to the volunteer and have them read through it to understand. Also provide each testee with as much paper as needed. For Sample #1, hand them 1 code for practice, allowing them to take them as much time as needed to complete the cipher completely. Once the testee completes each practice, show them the answer before they go onto the next practice. Give testee the designated tests of Aristocrats for Sample #1. Each Aristocrat from the set must be given individually and be individually done. As soon as the testee states that (s)he is done stop the timer and record the time. Repeat this step for the three tests in that set. Provide a 5 minute break in between Sample #1 and Sample #2. For Sample #2, hand them 3 codes for practice. Hand them each code individually and the next after completion of each practice. Allow them to take as much time as needed. Once the testee completes each practice, show them the answer before they go onto the next practice.</p>	
Summary Statement Examining the importance of repetition in learning a complex topic.	
Help Received Jasmine Vo, a colleague, helped me evaluate the question and design an experiment that will answer the question. Mandy Chocky, another colleague, helped me design and correct the ciphers. Additionally, I would like to acknowledge all 15 people who helped with the completion of the trials.	